

Brigade Deep Battle 2.0:

Light-Cavalry Solution to Operationalizing Deliberate Unmanned Aerial Vehicle/Fires Teaming in Support of Brigade Deep Fight

by CPT Joseph D. Schmid

Military professionals throughout the globe have witnessed Russia's ability to systematically project "annihilation fires," leveraging nascent unmanned aerial vehicles (UAV) teamed with massed rocket and cannon artillery during the ongoing Russo-Ukrainian conflict. The debilitating effects of the Russian UAV/fires teaming was detailed in the article "Russia's New Generation Warfare" by Phillip Karber, president of the Potomac Foundation, and Joshua Thibeault, a member of the Russian New Generation Warfare Study Team. "Ukrainian units have observed up to eight Russian UAV overflights per day," Karber and Thibeault wrote. "The increased availability of overhead surveillance combined with massed area fires [produced] ... approximately 80 percent of all casualties."¹

Russian UAV/fires teaming served the dual purpose of instantly attriting whole battalions of Ukrainian mechanized infantry and had the uncanny effect of disrupting the Ukrainian observe, orient, decide, act (OODA) loop decision cycle.²

To put this in perspective, imagine a U.S. combined-arms brigade (CAB) "in a three-minute period ... [suffering] a Russian fire strike, destroying two mechanized battalions with a combination of top attack munitions and thermobaric warheads."³ Following the almost instantaneous loss of two mechanized-infantry battalions, the imagined CAB would likely no longer be able to perform basic warfighting functions. Consequently, its remaining combat power could no longer successfully close with and destroy a comparatively sized adversarial near-peer formation. This troubling observation from the Russo-Ukrainian conflict has hastened U.S. UAV interoperability, especially at echelons above battalion.

UAV/fires teaming

Training exercises, both real and virtual, have led to improvements in U.S. organic UAV/fires teaming. During Exercise Rim of the Pacific (RimPac) 2016, the Marine Corps' UAV squadron 3 (VMU3) tested its RQ-7B Shadow's (UAV used for reconnaissance, surveillance, target acquisition and battle-damage assessment) ability to perform a traditional call for fire. MAJ Jarrod Larson, executive officer of VMU-3, commented, "One of the things we're designed for that we do really well is that forward-observer role. ... We can go very deep in the battlespace and call for fire with either artillery fires or with other aircraft. [Then we] relay those targets to either the ground controllers or actually control and observe those fires ourselves."⁴

The VMU3's RQ-7B Shadow became yet another sensor proficient in providing rapid targeting data for responsive artillery strikes based off the target-selection standards recommended by a fire-support coordinator.

Larson's UAV/fires scenario was internalized by the 25th Infantry Division Artillery (DivArty) after it coupled manned/unmanned teaming (MUM-T) with traditional lethal fires to generate a paradigm for the purpose of maximizing lethality and target handoff in a contested division deep area (between the division coordinated firing line (CFL) and the fire-support coordination line). The initial concept, originally developed by MAJ Bobby Sickler, MAJ David Henderson and John Hansen in their article, "Deep Battle 2.0: An Integrated Division Deep Fight," was "broken into four distinct phases: shape, find, destroy and accomplish the mission."⁵

During the shape phase, the DivArty tactical-operations center (TOC) reduced "the enemy air-defense posture to a level acceptable to employ rotary-wing aviation with a relative level of freedom of maneuver."⁶ Kinetic strikes, usually in the form of M26 rockets fired from high-mobility artillery rocket systems, exploited targeting data acquired by the organic Gray Eagle UAV to destroy adversarial air-defense assets.

"The find and destroy phases took place in a continuous loop within the engagement area," wrote Sickler, Henderson and Hansen.⁶ Lethal indirect fires were employed for targets such as adversarial long-range artillery, light-skinned vehicles, command-and-control nodes and target-acquisition radars. Armored targets were passed to rotary wing.

With this system of systems, it's key to note that one umbrella organization, the 25th DivArty, colocated both the UAV asset able to transmit targeting data and the firing unit able to rapidly receive the target, compute firing data and fire. During fiscal years 2016-17, this construct was validated in many command-post exercises such as Yama Sakura 71, Talisman Saber and Ulchi Freedom Guardian, culminating in 25th DivArty's Warfighter 2017 performance. Key to success was the colocation of the Gray Eagle feed directly adjacent to the fire-control element, contributing to rapid lethal responsiveness upon target identification.

Keeping in mind the advantages of the UAV/fires teaming portrayed in this article while exploiting 3rd Brigade's recent experience during its Joint Readiness Training Center (JRTC) 18-04 rotation, I will portray how the incorporation of deliberate UAV/fires teaming may have increased 3rd Squadron, 4th Cavalry Regiment's ability to project combat power deep within our own heavily contested brigade deep-fight area. Drawing on past experiences gained as a troop fire-support officer (FSO) as well as a DivArty battle captain, I will isolate certain "Division Deep Battle 2.0" characteristics and apply them to the brigade deep fight in an effort to synchronize dynamic UAV target-acquisition efforts with a light-cavalry squadron's tactical-control (tacon) artillery battery.

Ultimately I will argue for the establishment of a deliberate UAV/fires cell inside the 3-4 Cav TOC able to act as an umbrella organization, coupling UAV target-acquisition efforts with a tacon fire-direction center (FDC). I believe the realization of these arguments will set the necessary conditions for 3-4 Cav to impose catastrophic disruptive fires focused wholly on dynamic targets, presenting real-time threats between the forward-line-of-troops and the division CFL.

Friction points

During our unit's (3-4 Cav) recent 18-04 JRTC rotation, I believe two phases of the battle presented unique friction points that would have benefited from the incorporation of deliberate UAV/fires teaming. These events included 3-4 Cav's initial advance into the engagement area in support of 3rd Brigade's forward-passage-of-lines (FPOL) and its screen of 2nd Battalion, 27th Infantry Regiment, during the defense. During Scenario 1, 3-4 Cav's establishment of 3rd Brigade's FPOL, the squadron retained tacon of one M119A3 105mm howitzer battery, which generally received calls for fire (CFF) from fire-support teams (FISTs). The FIST teams used traditional observation techniques, and they were colocated with their respective cav troops. CFFs were initiated on dismounted platoon-size elements or lightly-skinned adversarial vehicles, often after making initial contact. Overall, any remnant forces the cavalry squadron encountered were destroyed or retrograded. The screen resulted in a successful FPOL with its sister units, 2-27 Infantry and 3rd Battalion, 25th Infantry Regiment. However, in the process, adversarial forces were allowed to make initial contact with ground elements of 3-4 Cav.



Figure 1. Artillery like the M119A3 105mm howitzer helps shape the battlefield.

LTC Scott Pence, commander of 5th Squadron, 73rd Cavalry (Airborne), recounts from his JRTC experience that “the opposing forces used light humvees to quietly and slowly occupy dismounted observation points, gain visual contact and harass the rotational unit with indirect fires.”⁸ Therefore the underlying problem was allowing the enemy to gain a position of relative advantage, which granted them the ability to collect positional information on our most forward formations. We were unable to maintain a favorable stand-off distance between ourselves and advancing adversarial forces. Conversely, adversarial forces imposed favorable stand-off distances in the latter stages of the battle as 3rd Brigade established a defense with two infantry battalions abreast and 3-4 Cav screening forward.

All attempts to ascertain enemy force posture and movement were frustrated. Our efforts to conduct surveillance within the brigade deep fight along likely avenues of approach were routinely denied, resulting in rotary and fires’ inability to initially disrupt advancing columns of mechanized infantry and armor. The failure to project disruption fires within the brigade deep fight during the defense led to increased attrition of our maneuver battalions during their direct engagement. This failure stemmed from our collective inability to bypass the enemy’s disruption zone in an effort to acquire targets behind the forward edge of battle area. Both circumstances, the initial entry of 3-4 Cav and the brigade’s defense, highlight an inadequate ability to routinely project coordinated disruptive lethal fires into the brigade deep fight during key elements of the battle.

Consequently, we’ll now transition to blending select characteristics of Henderson’s Division Deep Battle 2.0 theory with emerging cavalry doctrine to generate the conditions needed for rapid lethal fires within the brigade’s contested deep fight, synchronized by an aggressive light-cavalry squadron TOC, acting as a UAV/fires umbrella organization.

In an article titled, “The Return of Cavalry: A Multi-Domain Battle Study,” Armor Branch majors Jennings, Fox, Taliaferro, Griffith and Trottier said, “It has become increasingly vital for advance ground elements to integrate indirect, aerial ... and informational fires to dynamically shape battlefield outcomes.”⁹

The incorporation of deliberate UAV/fires teaming during 3-4 Cav’s establishment of 3rd Brigade’s FPOL could have potentially shaped the battlefield more in our favor. Imagine, upon FPOL establishment, all squadron RQ-11 Ravens were leveraged to observe pre-planned likely avenues of approach. Cav small unmanned aerial systems (SUAS) Raven teams would traverse three to four kilometers in front of their troop formations, effectively extending the likelihood of observing the adversary for the purpose of dynamic targeting. Think of the Raven section, possibly teamed with a troop FIST, as a multi-domain battle (MDB) version of the combat observation and lasing team of the early 2000s that “augmented the platoons for an additional target acquisition capability.”¹⁰



Figure 2. The Raven SUAS extends the likelihood of observing the adversary and targeting them.

Brigade Deep Battle 2.0 simply takes a Vietnam-era aerial observer concept and repackages it for today's modern technology to maximize UAV/fires teaming within a light-cavalry squadron. As the adversary attempts to probe the FPOL site, each troop's Raven acquires targets triggering the operator's CFF. All CFFs are centralized within the 3-4 Cav fires-and-effects coordination cell (FECC) located either inside or slightly offset from the 3-4 Cav TOC. Similar to 25th DivArty's technique of colocating the Grey Eagle feed with the fire-control center, one of the tacon artillery fire-direction centers will be either inside or slightly offset from the 3-4 Cav TOC directly adjacent to the 3-4 Cav FECC. This sensor and shooter colocation will promote responsive UAV/fires teaming and grant the FDC enhanced maneuver situational awareness, something battery and platoon FDCs have collectively struggled to achieve.

The idea of exploiting SUAS as portrayal here is not new. CPT Christopher M. Brandt, commander of Headquarters and Headquarters Troop, 3rd Squadron, 89th Cavalry Regiment, makes use of this emerging concept in his article, "The Future of Unmanned Systems in Cavalry Squadrons."¹¹ He opens with a vignette in which small cavalry teams, not unlike the Raven/FIST combination advocated previously, infiltrate adversarial lines to generate calls for fire. He writes, "At the press of a button, the drone lazes the target, and it delivers a set of triangulated set of coordinates to the enemy position. ... Artillery begins raining down on the unsuspecting [enemy] troops." Brandt's scenario illustrates the enhanced lethality of cav SUAS infiltration teams coupled with a tacon indirect-fire asset and the impact this can bring to the brigade deep fight.

Cav SUAS potential

The cav SUAS infiltration teams have the potential to enhance the comprehensive layering of indirect and rotary-wing weapon systems using forward-positioned Ravens under centralized control of 3-4 Cav's TOC to engage in MUM-T with the 25th CAB's rotary-wing assets. The dedicated tacon artillery battery would provide the cav's long reach into the brigade deep fight, targeting advancing infantry dismounts, light-skinned technical vehicles and

especially any air-defense artillery threat attempting to deny freedom of maneuver to friendly rotary-wing assets. As armored targets present themselves, cav SUAS infiltration teams use MUM-T by sharing targeting data with 25th CAB.

Remnant forces that survive the initial artillery disruption fires may continue to advance toward 3-4 Cav troop positions. However, these adversary forces are still tracked by cav SUAS infiltration teams so they can be engaged by 120mm mortars. Any other remnant forces of these two targeting cycles will be severely attrited and dispatched by .50-caliber machinegun and/or M240B machinegun fire.

This echelonment of fire coordinated by 3-4 Cav and supported by 3-7 Field Artillery (FA) is what creates a woodchipper-like scenario, ensuring the maximum lethality of all weapons systems while maintaining an appropriate stand-off range between forward cav elements and advancing adversarial forces. Now transpose the previously described system onto both the FPOL and the brigade defense scenarios we encountered in JRTC. I'd argue that by first introducing, then enacting the Brigade Deep Battle 2.0 theory, 3-4 Cav teamed with 3-7 FA and rotary elements of 25th CAB can achieve greater destructive lethality.

Advanced synchronization

In conclusion, the Brigade Deep Battle 2.0 theory is simply "a way" to achieve enhanced synchronization among a light-cavalry squadron, SUAS and its tacon artillery battery. By layering indirect assets teamed with SUAS infiltration teams, we maximize windows of opportunity to attrite advancing adversarial forces while simultaneously granting increased survivability to forward-positioned cav units. This system can project the destruction observed within Russian UAV/fires teaming onto adversarial forces seeking to disrupt 3-4 Cav objectives. And finally, by integrating air, land and cyber domains within UAV/fires teaming, 3-4 Cav can nest more firmly within the Army's emerging MDB concept.

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Notes

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² Donald A. MacCuish, "Orientation: Key to the OODA Loop – the Culture Factor," **Journal of Defense Resources Management**, Vol. 3, Issue 2, 2012.

³ Phillip Karber, "Examining Russia's Policy Near, Abroad and Around the World," 2015 AUSA Annual Meeting and Exposition, Washington, DC, Oct. 12-15, 2015.

⁴ Megan Eckstein, "RimPac 2016: Marines Test UAVs for Artillery Calls for Fire, Close Air Support," **U.S. Naval Institute News**, Aug. 1, 2016.

⁵ MAJ Bobby Sickler, MAJ David Henderson and John Hansen, "An Integrated Division Deep Fight, Deep Battle 2.0," **News from the Front**, Center for Army Lessons-Learned, February 2017.

⁶ Ibid.

⁷ Ibid.

⁸ LTC Scott Pence, "The Lethality Imperative: Training Cavalry Squadrons to Fight for Information," **ARMOR**, Summer 2017.

⁹ MAJ Nathan A. Jennings, MAJ Amos C. Fox, MAJ Adam L. Taliaferro, MAJ David W. Griffith and MAJ Kyle T. Trottier, "The Return of Cavalry: A Multi-Domain Battle Study," **ARMOR**, Summer 2017.

¹⁰ Robert S. Davidson, "[Reconnaissance and Security] lessons learned-brigade reconnaissance troop employment," **Military Intelligence Professional Bulletin**, Vol. 26, Issue 4, 2000.

¹¹ CPT Christopher M. Brandt, "The Future of Unmanned Cavalry in Cavalry Squadrons," **ARMOR**, April-June 2015.

Acronym Quick-Scan

AFAR – field-artillery regiment

CAB – combined-arms brigade

CFF – call for fire

CFL – coordinated firing line

DivArty – division artillery

FA – field artillery
FDC – fire-direction center
FECC – fires-and-effects coordination cell
FIST – fire-support team
FPOL – forward-passage-of-lines
FSO – fire-support officer
JRTC – Joint Readiness Training Center
MDB – multi-domain battle
MUM-T – manned/unmanned teaming
OODA – observe, orient, decide, act
RimPac – (Exercise) Rim of the Pacific
SUAS – small unmanned aerial system
Tacon – tactical control
TOC – tactical-operations center
UAV – unmanned aerial vehicle
VMU3 – Marine Unmanned Aerial Vehicle Squadron 3